

CONCENTRATION RATIOS TO AQUATIC PLANTS AT AND NEAR OLKILUOTO REPOSITORY SITE

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In Finland, Olkiluoto Island on the western coast has been selected as a repository site for spent nuclear fuel disposal. With approaching licensing steps (application for nuclear construction licence in 2012), the biosphere assessment demonstrating the long-term safety of the repository is developed into more and more site specific. At the present coastal site, lakes will form in the future millennia due to the post-glacial crustal rebound, i.e. land uplift, which at least eventually will outrun the anthropogenic sea level rise. Both the brackish bays of Baltic Sea and the future lakes can be primary recipients of releases from the deep underground repository, and the aquatic plants can form a major pool of radionuclides with a rather rapid turnover. In some cases the aquatic plants are a relevant part of wildlife food web and possibly also a resource for human uses. To provide the biosphere assessment models with site-relevant input parameter data, samples of typical aquatic plants (e.g. common reed, sedges and water lilies) were collected from the sea area at the site and from two nearby lakes analogous to those expected to form at the site during the future millennia. This contribution will present water-to-plant concentration ratios of stable element based on these samples with focus on the elements of a high relevance to the biosphere assessment of the Olkiluoto spent fuel repository (e.g. I, Mo, Cs, Ni, Se) together with discussion on the role of root uptake versus the application of the water-to-plant concentration ratio based on the field observations and data from the analyses.